

REMARKS

Introduction

Claims 1 - 12 were originally pending in this application. In a preliminary amendment filed concurrently with the original application on November 18, 2003, claims 1 – 12 were cancelled and claims 13 – 24 were added. Claims 13 – 24 have been cancelled and new claims 25 – 31 have been added in this response to the present Office Action dated February 04, 2005. Thus, claims 25 -31 remain in this application. No new matter has been added.

Information Disclosure Statement

The Examiner indicated that the listing of references in the specification did not constitute a proper information disclosure statement. At the same time, applicants note that the Examiner has filed a PTO-892 form listing the prior art references cited in this application. Nevertheless, in the abundance of caution, applicants are submitting a separate IDS along with this amendment that lists the references cited in the specification of this application as well as other prior art patents. Applicants respectfully solicit consideration of these references before the allowance of the application.

Oath/Declaration

The Examiner indicated that the Declaration in this application was defective for failing to identify the specification to which the Declaration is directed. Accordingly, a copy of the previously

filed Declaration that adequately identifies the specification to which it is directed is submitted herewith.

Drawings

The Examiner objected to the drawings as presently filed for failing to show all features of the claimed invention. Specifically, the Examiner states that the drawings fail to illustrate the automated manual transmission of claim 22, the automated double clutch transmission in claim 23, and the torque converter of claim 24. As indicated above, claims 13 through 24 have been cancelled and new claims 25 through 31 are not directed toward any of these devices. Accordingly, applicants respectfully submit that the drawings as presently filed properly illustrate all of the features claimed in new claims 25 – 31 and are in compliance with 37 CFR 1.83(a) without need of replacement.

Substitute Specification

In addition to the amendments made to the claims, submitted herewith is a substitute specification pursuant to 37 C.F.R. 1.125(b). A version of the substitute specification with markings to show the changes made is attached hereto at Appendix A. No new matter has been added. This substitute specification is submitted to place the application in a form that is consistent with practice before the USPTO. In particular, the specification has been amended to change the title from “AXIALLY FIXED AND ADJUSTABLE DRIVE PLATE” to “AXIALLY FIXED DISK CARRIER ASSEMBLY” to more accurately reflect the claimed invention. Additionally, the specification has been amended to bring the “ABSTRACT” into compliance with MPEP § 608.01(b) using less than 150 words.

The Examiner additionally objected to the specification for making reference to claim numbers on pages 3 and 4. It should be noted that the "SUMMARY OF INVENTION" was a literal translation of the original German application and included numerous grammatical and syntactic errors. Additionally, the SUMMARY OF INVENTION included extensive description of the features of the invention that should have been in the DETAILED DESCRIPTION OF THE INVENTION.

In light of the Examiner's objections and the format of the application in its raw translation, the text of the SUMMARY OF INVENTION and DETAILED DESCRIPTION OF THE INVENTION have been amended in the substitute specification. In particular, the references to numbered claims have been removed and the SUMMARY OF INVENTION is now directed toward the subject matter of independent claim 25. Details of the features of the invention have been moved to the text of the DETAILED DESCRIPTION. In addition, the paragraphs of this substitute specification have been individually renumbered as indicated. It is respectfully submitted that the substitute specification brings the application into compliance with standard U.S. practice.

Claim Rejections

35 U.S.C. § 112

Claims 22 - 24 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. More specifically, the Examiner contends that the subject matter of the claims relating to an automated manual transmission in claim 22, an automated double clutch transmission in claim 23, and a torque converter in claim 24 were not described in the specification. As indicated above, claims 22 through 24 have been cancelled and new claims 25 - 31

are not directed toward any of these devices. Accordingly, applicants respectfully submit the new claims are in compliance with 37 CFR 1.83(a).

Claims 13 - 24 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicants regard as the invention. More specifically, the Examiner pointed out a number of terms in claims 13-24 that lacked proper antecedent basis, and a number of instances where it was unclear if terms enclosed in parentheses were to be part of the claim invention. As indicated above, claims 13 through 24 have been cancelled. Applicants respectfully submit that the new claims 25 through 31 provide proper antecedent basis for all the terms used therein and are otherwise in compliance with 35 U.S.C. § 112.

35 U.S.C. § 102(b) and §103(a)

Claims 13, 15-18, and 22-24 were rejected under 35 U.S.C. § 102(b) as being anticipated by, or in the alternative, under 35 § 103 (a) as obvious over Okada et al '948. A claim is said to be anticipated where each and every limitation of the claim can be found in a single reference. The Examiner also rejected claims 14, 19 and 20 under 35 U.S.C. § 103 (a) as being obvious over Okada et al '948 in light of Schmidt et al (US 2004/0060795 A1). Further, The Examiner rejected claim 21 under 35 U.S.C. § 103 (a) as being unpatentable over Okada et al '948 in view of Tanaka et al '474. Claims 13 - 21 have been cancelled and new claims 25 – 31 have been added which more particularly describes the invention. Applicants respectfully submit that the invention described in new independent claim 25 is neither disclosed nor suggested by the Okada '948 patent. Accordingly, allowance of claims 25 – 31 is respectfully solicited for the reasons set forth below.

The Okada '948 Patent

The Okada '948 patent is directed to the structure of a spline connection for a power transmission device. More specifically, the Okada '948 patent discloses a solid clutch drum 42 for retaining clutch disks or plates. The clutch drum 42 has longitudinal formed internal splines, or central keys 42b₁ that support the clutch disks or plates, and internal spline (grooved) ends 42a₁ that engage external splines 56a of a carrier member 56. The splined carrier member 56 also includes one external toothed portion 56c. The external toothed portion 56c radially projects beyond the carrier member 56 in a cutout portion 60. As shown in Figure 3, the two opposite sloped sidewall surfaces 56c₁ of the external tooth 56 fit between the correspondingly sloped inside surfaces 60a of the cutout 60 such that a gap exists between the sides of the external tooth 56c and the sides of the cutout 60. Further, the Examiner uses the term “minimum value” of clearance from Okada to suggest that the direct engagement of the load teeth of the drive plate and the cutouts of the disk carrier in the cancelled independent claim of the present invention was obvious. However, the term “minimum value” is taken from column 7, lines 39 – 67 of Okada '948, which is discussing “*axial*” movement of the carrier member 56 with respect to the clutch drum 42 and snap ring 62, *not* the elimination of *radial* free play as with the present invention.

Additionally, the Okada '948 patent discloses a splined connection between the clutch drum 42 and carrier member 56 with splined teeth and grooves, and only a single outwardly protruding tooth 56c. More specifically, The Okada '948 patent teaches a particular relationship between the depth of the spine ends (grooves) 42a₁ and the depth of the central keys (grooves) 42b₁ that support the clutch disks, which is a specific function of the structure of the splined interconnection. Thus, it would be impossible to employ the alternating load teeth and bearing teeth of the present invention

without destroying the specifically proportioned splined teeth and groove interconnection taught by Okada.

Moreover, the Okada '948 patent neither discloses nor suggests the present invention as claimed in new independent claim 25. More specifically, the Okada '948 patent does not disclose or suggest a disk plate having a plurality of radially extending load teeth and a plurality of radially extending bearing teeth with the load teeth and bearing teeth alternately disposed about the circumference of the disk plate. Okada also does not disclose or suggest a disk carrier having an axially extending cylinder segment with a plurality of axial protrusions that further include a plurality of axial load protrusions and a plurality of axial bearing protrusions, each axial load protrusion having a load tooth cutout formed on its axial end and each axial bearing protrusion having an elongated area with an annular retaining groove, such that the axial bearing protrusions are alternately disposed between the axial load protrusions. Further, the Okada 948 patent does not disclose or suggest that the drive plate is operatively mounted within the disk carrier such that the load teeth of the drive plate directly engage the load teeth cutouts of the axial load protrusions to prevent radial free play between the disk carrier and the disk plate.

The Schmidt et al Publication and Tanaka et al '474 Patent

The Schmidt publication is directed to a multi-disk clutch structure that includes a driver disk with external teeth that correspond to internal teeth formed in a clutch casing. The drive disk of Schmidt has only load teeth with one embodiment that discloses wedge shaped load teeth. Further, the Schmidt and Okada references are incompatible for the reasons stated above with regard to the splined connections of the Okada disk carrier and drum.

The Tanaka '474 patent discloses a clutch drum for retaining clutch disks or plates. The drum is pressed or stamped to form a plurality of load teeth for retaining the clutch disks and a plurality of secondary teeth to provide sensor inputs for detecting drum rotation. During its construction, the drum is welded to a center hub. Further, the Schmidt and Okada references are incompatible for the reasons stated above with regard to the splined connections of the Okada disk carrier and drum.

However, the Schmidt publication and the Tanaka '474 patent do not disclose or suggest a disk plate having a plurality of radially extending load teeth and a plurality of radially extending bearing teeth with the load teeth and bearing teeth alternately disposed about the circumference of the disk plate. Additionally, the Schmidt publication and the Tanaka '474 patent do not disclose or suggest a disk carrier having an axially extending cylinder segment with a plurality of axial protrusions that further include a plurality of axial load protrusions and a plurality of axial bearing protrusions, each axial load protrusion having a load tooth cutout formed on its axial end and each axial bearing protrusion having an elongated area with an annular retaining groove, such that the axial bearing protrusions are alternately disposed between the axial load protrusions. Further, the Schmidt publication and the Tanaka '474 patent do not disclose or suggest that the drive plate is operatively mounted within the disk carrier such that the load teeth of the drive plate directly engage the load teeth cutouts of the axial load protrusions to prevent radial free play between the disk carrier and the disk plate.

The Present Invention

In contrast to the prior art references, the present invention as defined in independent claim 25 is a disk carrier assembly for a multi-disk clutch that includes a disk plate having a plurality of radially extending load teeth and a plurality of radially extending bearing teeth, with the load teeth and bearing teeth alternately disposed about the circumference of the disk plate. The present invention also includes a disk carrier having an axially extending cylinder segment, the segment including a plurality of axial protrusions that extend radially inward and a plurality of axial grooves that extend radially outward. The protrusions and the grooves are alternately disposed about the segment, with the axial grooves adapted to radially retain a plurality of clutch disks while allowing operative axial movement. The plurality of axial protrusions further include a plurality of axial load protrusions and a plurality of axial bearing protrusions, each axial load protrusion having a load tooth cutout formed on its axial end and each axial bearing protrusion having an elongated area with an annular retaining groove. The axial bearing protrusions are alternately disposed between the axial load protrusions. The drive plate is operatively mounted within the disk carrier such that the load teeth of the drive plate directly engage the load teeth cutouts of the axial load protrusions to prevent radial free play between the disk carrier and the disk plate, the bearing teeth operatively disposed circumferentially within the axial bearing protrusions. A securing ring is radially disposed in each of the annular retaining grooves adapted to operatively secure the disk plate within the disk carrier by pressing against the bearing teeth such that the load teeth press against the load teeth cutouts thereby removing axial free play between the disk carrier and the disk plate.

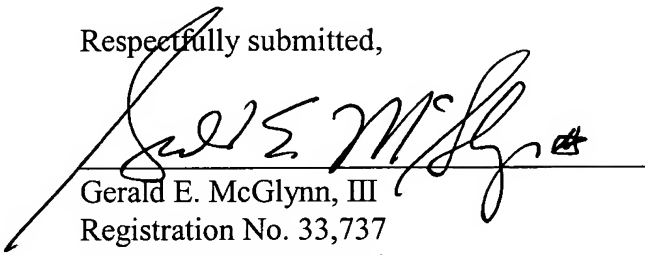
Thus, the Okada reference in combination with either the Schmidt publication or the Tanaka '474 patent does not disclose or suggest the structure of the present invention as defined in new

independent claim 25. Furthermore, even if the Okada reference is combined with both the Schmidt and Tanaka references, the result still does not provide the structure of the present invention as claimed in new independent claim 25.

Conclusion

In view of the above, applicants respectfully submit that new claims 25 - 31 distinguish over the prior art and are therefore allowable. Accordingly, applicants respectfully solicit the allowance of the claims presently pending in this case.

Respectfully submitted,



Gerald E. McGlynn, III
Registration No. 33,737
BLISS McGLYNN, P.C.
2075 W. Big Beaver, Suite 600
Troy, MI 48084
(248) 649-6090

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